UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,389	11/14/2001	Makoto Itonaga	24828	7016

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NATH & ASSOCIATES
1030 15th STREET, NW
6TH FLOOR
WASHINGTON, DC 20005

EXAMINER
AGUSTIN, PETER VINCENT

ART UNIT	PAPER NUMBER
2652	

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

		Application No.	Applicant(s)
Office Action Summary		09/987,389	ITONAGA ET AL.
		Examiner	Art Unit
		Peter Vincent Agustin	2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 August 2004*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-10* is/are pending in the application.

    4a) Of the above claim(s) *9 and 10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some *   c)☐ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/14/04 & 9/2/04*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1.   Claim 8 is objected to because of the following informalities:

On line 14: "a first surface and a second surface" should be changed to

--a first surface and a second surface of said objective lens-- in order to provide a clear

antecedent basis.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

3.   Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ota et al. (US

6,411,442) in view of Kasami et al. (JP 411120594 A) & Tanaka et al. (US 4,927,247).

Ota et al. disclose an objective lens (figure 1a) for an optical disk, comprising a single

lens having at least one surface formed in an aspheric shape and having a numerical aperture of

0.78 or more (column 2, lines 6-11), and satisfying the following condition: $d_1 / f > 1.2$ (column

2, line 21); $0.65 < R1 / f < 0.95$ (column 2, lines 37 & 47); $| R1/R2 | < 0.7$ (figure 1a shows R2

close to infinity, i.e., R1/R2 approaches zero); and $n > 1.65$ (column 2, lines 37 & 43), in which f

denotes a focal distance of the lens, d_1 denotes a center thickness of the lens, R1 denotes a

curvature radius in a vertex of the lens on a light source side, R2 denotes a curvature radius in a

vertex of the lens on an optical disk side, and n denotes a refractive index of the lens; and having

a wavefront aberration of $0.04 \, \lambda$ or less when a first surface and a second surface are not co-axial

by 5 μm (see table 1, example 5: in this case, the wavefront aberration is 0.019 λ when an axial

off-axis is 0.005 mm, i.e., 5 μm). Ota et al., however, do not explicitly disclose that the optical

disk includes a transmission layer having a thickness of 0.3 mm or less. Furthermore, Ota et al.

do not explicitly disclose that the objective lens has a working distance of 0.3 mm or more.

Kasami et al. (see solution) disclose an optical disk having a transmission layer of

thickness 0.3 mm or below. It would have been obvious to one of ordinary skill in the art at the

time of invention by the applicant to have used the optical disk having a transmission layer of

thickness 0.3 mm or below of Kasami et al. in conjunction with the objective lens of Ota et al.,

the motivation being to provide accurate initialization of the optical disc (see first line of

problem to be solved and last line of solution), thereby enabling accurate data reproduction and

recording.

Tanaka et al. disclose a working distance of at least 0.4 mm between an objective lens

and a substrate of a disc in order to prevent collision (column 4, lines 43-53). It would have been

obvious to one of ordinary skill in the art at the time of invention by the applicant to have used

an operation distance of 0.3 mm or more between the objective lens and disc of Ota et al., as

suggested by Tanaka et al., the motivation being to prevent collision, thereby preventing damage

to the objective lens and the disc.

4.   Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kiriki et al. (US

6,349,083) in view of Kasami et al. (JP 411120594 A), Tanaka et al. (US 4,927,247) and the

applicant's admitted prior art.

Kiriki et al. disclose an objective lens (figure 4) for an optical disk, comprising a single

lens having at least one surface formed in an aspheric shape (column 14, line 5) and having a

numerical aperture of 0.78 or more (column 13, line 66: NA = 1.19), and satisfying the following

condition: $d_1 / f > 1.2$ (column 13, line 66: f = 1.0 and column 14, line 5: d_1 = 1.828); $0.65 < R1 /$

$f < 0.95$ (column 14, line 5: R1 = 0.92); | R1/R2 | < 0.7 (figure 1 shows R2 is infinity, i.e., R1/R2

approaches zero); and n > 1.65 (column 14, line 5: n=1.833), in which f denotes a focal distance

of the lens, d_1 denotes a center thickness of the lens, R1 denotes a curvature radius in a vertex of

the lens on a light source side, R2 denotes a curvature radius in a vertex of the lens on an optical

disk side, and n denotes a refractive index of the lens. Kiriki et al., however, do not explicitly

disclose that the optical disk includes a transmission layer having a thickness of 0.3 mm or less.

Furthermore, Kiriki et al. do not explicitly disclose that the objective lens has a working distance

of 0.3 mm or more and has a wavefront aberration of 0.04 λ (λ is a design reference wavelength)

or less when a first surface and a second surface are not co-axial by 5 μm.

Kasami et al. (see solution) disclose an optical disk having a transmission layer of

thickness 0.3 mm or below. It would have been obvious to one of ordinary skill in the art at the

time of invention by the applicant to have used the optical disk having a transmission layer of

thickness 0.3 mm or below of Kasami et al. in conjunction with the objective lens of Kiriki et al.,

the motivation being to provide accurate initialization of the optical disc (see first line of

problem to be solved and last line of solution), thereby enabling accurate data reproduction and

recording.

Tanaka et al. disclose a working distance of at least 0.4 mm between an objective lens

and a substrate of a disc in order to prevent collision (column 4, lines 43-53). It would have been

obvious to one of ordinary skill in the art at the time of invention by the applicant to have used

an operation distance of 0.3 mm or more between the objective lens and disc of Kiriki et al., as

suggested by Tanaka et al., the motivation being to prevent collision, thereby preventing damage to the objective lens and the disc.

The applicant's admitted prior art discloses an objective lens having a wavefront aberration of 0.04 λ (λ is a design reference wavelength) or less when a first surface and a second surface are not co-axial by 5 μm (see last paragraph of page 4, original specification). It would have been obvious to one of ordinary skill in the art at the time of the invention by the applicant to have provided the objective lens of Kasami et al. with a wavefront aberration of 0.04 λ or less when a first surface and a second surface are not co-axial by 5 μm, as suggested by the applicant's admitted prior art, the motivation being to compensate for axis deviation.

5.   Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kiriki et al. (US 6,349,083) in view of Kasami et al. (JP 411120594 A), Tanaka et al. (US 4,927,247) & Shimozono et al. (US 5,835,473).

Kiriki et al. disclose an objective lens (figure 1) for an optical disk, comprising a single lens having at least one surface formed in an aspheric shape (column 14, line 5) and having a numerical aperture of 0.78 or more (column 13, line 66: NA = 1.19), and satisfying the following condition: $d_1 / f > 1.2$ (column 13, line 66: f = 1.0 and column 14, line 5: d_1 = 1.828); $0.65 < R1 / f < 0.95$ (column 14, line 5: R1 = 0.92); $| R1/R2 | < 0.7$ (figure 1 shows R2 is infinity, i.e., R1/R2 approaches zero); and $n > 1.65$ (column 14, line 5: n=1.833), in which f denotes a focal distance of the lens, d_1 denotes a center thickness of the lens, R1 denotes a curvature radius in a vertex of the lens on a light source side, R2 denotes a curvature radius in a vertex of the lens on an optical disk side, and n denotes a refractive index of the lens. Kiriki et al., however, do not explicitly disclose that the optical disk includes a transmission layer having a thickness of 0.3 mm or less.

Furthermore, Kiriki et al. do not explicitly disclose that the objective lens has a working distance of 0.3 mm or more and has a wavefront aberration of 0.04 λ (λ is a design reference wavelength) or less when a first surface and a second surface are not co-axial by 5 μm.

Kasami et al. (see solution) disclose an optical disk having a transmission layer of thickness 0.3 mm or below. It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have used the optical disk having a transmission layer of thickness 0.3 mm or below of Kasami et al. in conjunction with the objective lens of Kiriki et al., the motivation being to provide accurate initialization of the optical disc (see first line of problem to be solved and last line of solution), thereby enabling accurate data reproduction and recording.

Tanaka et al. disclose a working distance of at least 0.4 mm between an objective lens and a substrate of a disc in order to prevent collision (column 4, lines 43-53). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have used an operation distance of 0.3 mm or more between the objective lens and disc of Kiriki et al., as suggested by Tanaka et al., the motivation being to prevent collision, thereby preventing damage to the objective lens and the disc.

Shimozono et al. disclose an objective lens having a wavefront aberration of 0.04 λ or less (column 22, lines 58-65). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have provided a wavefront aberration of 0.04 λ or less as suggested by Shimozono et al. to the objective lens of Kiriki et al., the motivation being to compensate for off-axis and to enable accurate data recording.

Kiriki et al. in view of Shimozono et al. do not explicitly disclose the limitation "when a first surface and a second surface are not co-axial by 5 μm". Shimozono et al., however, disclose a condition that "the off-axis coma aberration is substantially minimum", i.e., a first surface and a second surface are not co-axial by a certain amount. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have selected an off-axis range of 5 μm because applicant has not disclosed that this specific value provides an advantage, is used for a particular purpose, or solves a stated problem, and one of ordinary skill in the art would have expected applicant's invention to perform equally well with either the arbitrary "minimum" taught by Shimonozo et al. or the claimed 5 μm because both values perform the same function of measuring positional offset. Furthermore, selecting the specific claimed range of 5 μm would have been an obvious matter of design choice.

Response to Arguments

6.   Regarding claim 8, the applicant argues that the cited references fail to teach an objective lens having a 0.3 mm or less thick transmission layer. It should be noted, however, that amended claim 8 recites an objective lens for <u>an optical disk including a transmission layer having a thickness of 0.3 mm or less,</u> i.e., the transmission layer is part of the optical disk, not the objective lens. Furthermore, the purpose of the amendment is apparently to incorporate the subject matter of original claim 10, which clearly recites that "a thickness of a transmission layer of the optical disk is 0.3 mm or less". Furthermore, the specification does not provide any support for an objective lens having a 0.3 mm or less transmission layer.

Conclusion

7.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

        A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this
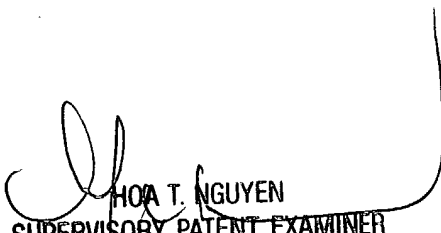
final action.

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Peter Vincent Agustin whose telephone number is 703-305-8980.

The examiner can normally be reached on Monday-Friday 9:30-5:30 PM.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hoa Thi Nguyen can be reached on 703-305-9687. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Peter Vincent Agustin
Art Unit 2652

HOA T. NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600